DEPARTMENT OF DEFENSE

INSTRUCTION

January 14, 1993
NUMBER 8120.2

SUBJECT: Automated Information System (AIS) Life-Cycle Management (LCM) Process, Review, and Milestone Approval Procedures

References:
(a) DoD Instruction 7920.2, "Automated Information System (AIS) Life-Cycle Management Review and Milestone Approval Procedures," March 7, 1990 (hereby canceled)
(b) DoD 7920.2-M, "Automated Information System Life-Cycle Management Manual," March 1990, authorized by this Instruction
(c) DoD 5025.1-M, "DoD Directives System Procedures," December 1990, authorized by DoD Directive 5025.1, December 23, 1988
(d) DoD Directive 8120.1, "Life-Cycle Management (LCM) of Automated Information Systems (AISs)," January 14, 1993
(e) through (u), see enclosure 1

A. PURPOSE

This Instruction:

1. Replaces reference (a).

2. Continues to authorize the publication of reference (b), in accordance with reference (c), until replaced by the publication of DoD 8120.2-M.

3. Authorizes the publication of DoD 8120.2-M, "Automated Information System Life-Cycle Management Manual," in accordance with reference (c), to update uniform procedures for conducting AIS LCM activities and provide guidelines for preparing AIS LCM documentation.

4. Requires submission of Quarterly Major Automated Information System (MAIS) Status Reports.

B. APPLICABILITY AND SCOPE

This Instruction:

1. Applies to the Office of the Secretary of Defense (OSD), the Military Departments (including their National Guard and Reserve components), the Chairman of the Joint Chiefs of Staff and the Joint Staff, the Unified and Specified Commands, the Inspector General of the Department of Defense, the Defense

Agencies, and the DoD Field Activities (hereafter referred to collectively as "the DoD Components").

2. Establishes procedures for the LCM review and milestone approval for the AIS programs, as defined in and subject to DoD Directive 8120.1 (reference (d)).

3. Shall be adapted by lead acquisition authorities for use in the LCM review and milestone approval of the delegated MAIS programs and the MAISs and the non-MAISs for which they are designated the "lead acquisition authority."

C. DEFINITIONS

Terms used in this Instruction are defined in enclosure 2 and reference (d).

D. POLICY

This Instruction implements policies in section D. of reference (d).

E. RESPONSIBILITIES

1. The Assistant Secretary of Defense for Command, Control, Communications, and Intelligence shall:

a. Review and validate each MAIS program designated for the Major Automated Information System Review Council (MAISRC) review (as authorized by DoD Directive 5137.1, reference (e)), for compliance with the DoD LCM policy, procedures, and standards for the AISs. Specific items of interest in the review and validation process are assigned to the MAISRC members, as delineated in paragraphs E.1.d. through E.1.f. and subsections E.2. through E.8., below.

b. Establish and issue procedures to periodically determine the status of each of the MAIS programs and detect potential problems.

c. Develop, issue, and maintain DoD 8120.2-M to implement uniform procedures for conducting the AIS LCM activities and provide guidelines for preparing the AIS LCM documentation.

d. Ensure that the Deputy Assistant Secretary of Defense (Defense-Wide Command, Control, and Communications) (DASD(D-WC3)) shall:

(1) Determine compliance of AIS program planning with the DoD telecommunications policy and procedures.

(2) Develop and maintain AIS program telecommunications guidance for publication in DoD 8120.2-M. Input for DoD 8120.2-M shall be provided within 120 days of

issuance of this Instruction and within 90 days of guidance updates.

e. Ensure that the Deputy Assistant Secretary of Defense (Counterintelligence and Security Countermeasures) (DASD(CI&SCM)) shall:

(1) Determine compliance of AIS program planning with the appropriate DoD security and data protection policy and procedures.

(2) Develop and maintain AIS program security guidance for publication in DoD 8120.2-M. Input for DoD 8120.2-M shall be provided within 120 days of issuance of this Instruction and within 90 days of guidance updates.

f. Serve as the milestone decision authority (MDA), and shall:

(1) Sign the system decision memorandum (SDM) issuing decisions and direction to the DoD Component.

(2) Serve as, or designate, the MAISRC Chair, who shall:

(a) Convene and preside over MAISRC meetings.

(b) Operate the MAISRC independently of the Defense Acquisition Board (DAB) for the AIS programs below the DAB thresholds and in a manner consistent with the acquisition policies outlined in DoD Directive 5000.1 (reference (f)). The AISs that exceed the DAB thresholds shall be forwarded to the DAB for review.

(c) Seek input and consider the opinions of the MAISRC members in resolving issues before issuance of LCM review decisions.

(d) Designate the MAISRC Executive Secretary.

(e) Ensure that the MAISRC members:

1 Review each MAIS program and provide recommendations to the MDA.

2 Participate in MAISRC meetings and deliberations.

3 Coordinate on the SDMs.

4 Designate a representative to serve on the MAISRC staff for each MAIS program.

(f) Ensure that the MAISRC Executive Secretary shall:

1 Provide administrative support for MAISRC operations and proceedings.

2 Coordinate and schedule each MAISRC review.

3 Communicate the LCM review requirements to the OSD Principal Staff Assistants (PSAs), the DoD Components and each MAIS program manager (PM), and facilitate resolution of the AIS program specific issues.

4 Coordinate the LCM review activities of the MAISRC staff, including preparation and distribution of the AIS program summary to the MAISRC members.

5 Review the supporting LCM documentation and promptly distribute it to the MAISRC members.

6 Prepare each SDM for coordination.

7 Issue and periodically update, guidance for submission of a Quarterly MAIS Status Report, and ensure re-porting compliance.

(g) Ensure that the MAISRC staff members, in their areas of responsibility, shall do the following:

1 Promptly review each MAIS program and its supporting documentation to assess program status.

2 Support their respective MAISRC member and assist in developing the MAISRC member's position.

3 If required information is not provided or is incomplete, promptly notify the lead acquisition authority in writing, in coordination with the MAISRC Executive Secretary and the OSD PSA, of the deficiency.

4 Provide other members of the MAISRC staff in a timely manner before the MAISRC meeting, insights, findings, and conclusions resulting from the detailed review of the MAIS program activities and documentation.

5 Provide a written analysis to the MAISRC Executive Secretary for incorporation into the AIS pro-gram summary 8 days before the MAISRC review.

2. The OSD Principal Staff Assistant and the Chairman of the Joint Chiefs of Staff, in their areas of responsibility, shall:

a. Establish and assign responsibilities to execute procedures to verify the DoD Component compliance with relevant functional policies, requirements, plans, procedures, and prior-ities.

b. Assess the DoD Component readiness for a MAISRC review, validate or revalidate the AIS mission need statement (MNS), and verify the AIS program compliance with DoD Directive 8120.1 (reference (d)).

c. For the MAISs, provide each validated and revalidated AIS MNS to the MDA for review, in accordance with reference (d) and enclosure 3 of this Instruction.

d. Participate in the LCM review process for the MAISs conducted by the acquisition authority designated to lead acquisition of the AIS.

3. The Chairman of the Joint Chiefs of Staff shall ensure that the appointed representative(s) determines compliance of AIS planning with joint policies and guidance.

4. The Assistant Secretary of Defense (Program Analysis and Evaluation) shall:

a. For all the AISs designated for MAISRC oversight, review and validate, at appropriate LCM reviews, the AIS program cost estimates, life-cycle cost estimates, independent cost estimates, benefit analyses, and functional economic analyses (FEAs).

b. Develop and maintain guidance on requirements for the AIS program cost estimates, life-cycle cost estimates, independent cost estimates, benefit analyses, FEAs, and requirements for validation of the MAIS cost estimates, for publication in DoD 8120.2-M. Input for DoD 8120.2-M shall be provided within 120 days of issuance of this Instruction and within 90 days of guidance updates.

5. The Comptroller of the Department of Defense shall:

a. Perform program and budget analysis consistent with the Planning, Programming, and Budgeting System (PPBS).

b. Ensure that the MDA decisions are reflected in the Defense program and budget.

6. The Under Secretary of Defense (Acquisition) shall ensure that:

a. The Director, Test and Evaluation (D,T&E), shall:

(1) Assess and validate, at MAISRC reviews, the AIS program compliance with applicable developmental test and evaluation planning policies and procedures.

(2) Serve as the focal point for coordination of the Test and Evaluation Master Plan (TEMP) and approve the TEMP for each of the MAISs.

(3) Designate observers to be present during developmental test and evaluation activities, as required to assess test preparation and execution, and test results.

(4) For each MAIS program or selected program increment, provide the MDA with an assessment of the developmental test and evaluation conducted by the lead acquisition authority.

(5) In coordination with the Director, Operational Test and Evaluation (D,OT&E), develop and maintain guidance for the AIS program test and evaluation planning and the TEMP preparation for publication in DoD 8120.2-M. Input for DoD 8120.2-M shall be provided within 120 days of issuance of this Instruction and within 90 days of guidance updates.

b. The Director, Acquisition Policy and Program Integration, shall determine whether program plans adhere to acquisition management policies and guidance.

7. The Director, Operational Test and Evaluation:

a. Assesses and validates, at MAISRC reviews, the AIS program compliance with applicable operational test and evaluation planning policies and procedures.

b. Approves the TEMP for each of the MAISs.

c. Approves the organizational structure of the group assigned to plan, conduct, and report on the MAIS operational test and evaluation.

d. Approves operational test plans, monitors operation-al test and evaluation of the AIS programs or selected program increment, in accordance with DoD Instruction 5000.2 (reference (g)), and provides the test and evaluation results to the MDA.

e. Provides guidance for publication in DoD 8120.2-M on the development of critical operational test criteria used to

evaluate the operational effectiveness and suitability of the AIS. In coordination with the D,T&E, develops and maintains the AIS guidance for program test and evaluation planning and the TEMP preparation for publication in DoD 8120.2-M. Input for DoD 8120.2-M shall be provided within 120 days of issuance of this Instruction and within 90 days of guidance updates.

8. The Heads of the DoD Components shall:

a. Establish the AIS LCM review bodies comparable to the MAISRC to review the delegated MAIS programs and for the MAIS and the non-MAIS programs for which the DoD Component has been designated the "lead acquisition authority."

b. Provide to the MAISRC Executive Secretary, within 10 days of the review, a copy of the briefing slides, minutes, and the SDM documenting each AIS LCM review of a MAIS or a delegated MAIS conducted by the DoD Component.

c. Validate the AIS program readiness for MAISRC review.

d. Ensure that the policies and procedures of the Technical Reference Model for Information Management and the Human Computer Interface Style Guide (references (h) and (i)) are fol-lowed in the planning, acquisition, and operations of the AISs.

e. Provide each of the new or updated AIS MNS to the sponsoring OSD PSA or the Chairman of the Joint Chiefs of Staff, or the designated representative for validation.

f. Notify the MAISRC Executive Secretary when there is a program baseline breach of a major AIS, in accordance with DoD 7920.2-M (reference (b)).

g. Submit to the MDA, alternative funding plans, or off-sets, for those AIS programs underfunded at the time of a MAISRC review.

F. PROCEDURES

1. AIS LCM Milestones and Phases. The AIS LCM milestones and phases, the planning activities, and other events that must be accomplished for AIS LCM are described in enclosure 3.

2. LCM Reviews. Two types of reviews are held in support of LCM. Both types of reviews may result in decisions and guidance being issued. Results of all reviews shall be documented.

a. Milestone Review. The MAISRC conducts the MAIS milestone reviews to evaluate the completion of the minimum

required LCM accomplishments and exit criteria, as defined in DoD Directive 8120.1 (reference (d)), recommends appropriate movement to the next phase, and recommends exit criteria for the next milestone review.

b. In-Process Review (IPR). The MDA may require an IPR of a MAIS program at any time. That includes the AIS programs for which the MDA responsibility has been delegated. The purpose of an IPR is to determine current program status, progress since the last MAISRC review, program risk and risk-reduction measures, and potential program problems that require guidance. An IPR shall be required:

(1) When the period of time between milestones, the AIS program complexity, or the AIS program risks warrant review;

(2) When there is a breach of the AIS program base-line; or

(3) At the discretion of the MDA.

3. Documentation

a. Milestone Review. The system decision paper (SDP) is the primary information source for a milestone review. The SDP is assembled, in accordance with DoD 7920.2-M (reference (b)), from existing program management documentation and summarizes the status of the AIS program. The MAISRC Executive Secretary may request the submission of supplemental program information.

b. The IPR. Documentation required from the AIS PM to support an IPR shall be based on the objective of the IPR, the LCM phase of the AIS program, the need to evaluate the AIS progress toward the next LCM milestone, program issues, and other MAISRC concerns. Documentation in support of an IPR shall be assembled from existing program management documentation, supplemented only by additional material required to support specific issues to be addressed by the IPR.

c. The SDM. A SDM shall be prepared and signed by the MDA for each LCM review. The SDM shall document the decisions made, the guidance provided, and the exit criteria established as the result of a LCM review.

4. Quarterly MAIS Status Report, RCS: DD C3I(Q) 1799. The Quarterly MAIS Status Report shall be prepared, in accordance with reference (b).

5. Delegation of MAIS Program MDA. Delegation of the MDA responsibility may be made at any point in the life cycle. Delegation of that authority shall be documented. The following factors shall be considered in reaching a delegation decision:

a. The MDA determines, with recommendation from the MAISRC, program status is acceptable, and technical and program risks are acceptable and managed well.

b. Program planning and evaluation activities, required by DoD Directive 8120.1 (reference (d)) and enclosure 3, below, have been completed successfully and are documented adequately.

c. The funding of the AIS program supports approved program plans.

6. Withdrawal of Delegation of the MAIS Program MDA. Delegation of the MDA responsibility may be withdrawn by the DoD MDA at any time. A breach of the baseline or of the criteria listed in paragraphs F.6.a. through F.6.c., below, are examples that will cause a LCM review under the auspices of the DoD MDA,

to determine whether delegation of the MDA responsibility is to be withdrawn.

a. Management and review of the AIS program, as required by reference (d) and in section F., is not adequate.

b. Significant questions or issues have surfaced in the execution of the acquisition strategy and associated procurement actions.

c. Program planning or program execution conflict with the DoD policy.

7. Approval Process Relationships to the PPBS.

a. The AIS LCM complements the PPBS process and supporting FEAs. At the LCM milestones, key resource decisions and issues about the future AIS plans, program management structure, total anticipated benefits, development progress, and operational effectiveness and suitability are assessed against affordability constraints and other Department, DoD Component, and/or functional area resource demands. Each milestone approval must fit into the affordability constraints established by estimates of the projected DoD fiscal resource requirements and documented through FEAs. Individual program plans must be consistent with the overall DoD planning and funding priorities.

b. The LCM milestone decisions are reflected in the Defense program and verified by the Comptroller of the Department of Defense (C, DoD). The MAISRC expects to review a fully executable AIS program at each LCM milestone.

c. The Program Objectives Memorandum (POM) provides supporting information on the AISs in the information technology budget exhibits ("43-series"), in accordance with DoD 7110.1-M (reference (j)).

d. Resources required to support the approved AISs shall be included in budget submissions, in accordance with the most current POM preparation instruction and the annual budget guidance. Differences between costs or schedules presented at a MAISRC review and the POM or budget submission shall be noted and explained in the relevant PPBS submission.

e. If there are differences that impact the AIS program in approved or proposed POM or budget submissions from what was presented to the MAISRC at the last review, the DoD senior in-formation management official shall be notified by the DoD Component responsible for developing the POM or submitting the budget.

G. INFORMATION REQUIREMENTS

The quarterly reporting requirement in subsection A.4., subparagraph E.1.f.(2)(f)7, and subsection F.4., above has been assigned Report Control Symbol DD-C3I(Q) 1799.

H. EFFECTIVE DATE AND IMPLEMENTATION

1. This Instruction is effective immediately. Forward one copy of implementing documents to the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence within 120 days.

2. This Instruction shall not be supplemented without the prior approval of the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence.

3. The Heads of the DoD Components shall distribute this Instruction to the Program Managers and appropriate field operating command level within 120 days of receipt.

Enclosures - 3
1. References
2. Definitions
3. LCM Phases and Milestones

REFERENCES, continued

(e) DoD Directive 5137.1, "Assistant Secretary of Defense for Command, Control, Communications, and Intelligence," February 12, 1992
(f) DoD Directive 5000.1, "Defense Acquisition," February 23, 1991
(g) DoD Instruction 5000.2, "Defense Acquisition Management Policies and Procedures," February 23, 1991
(h) "Technical Reference Model for Information Management," Version 1.2, May 15, 19921
(i) "Human Computer Interface Style Guide," Version 1.0, February 12, 19922
(j) DoD 7110.1-M, "Department of Defense Budget Guidance Manual," May 1990, authorized by DoD Instruction 7110.1, October 30, 1980
(k) Office of Management and Budget Circular No. A-109, "Major System Acquisitions," April 5, 1976
(l) DoD Directive 4630.5, "Compatibility and Interoperability of Tactical Command, Control, Communications, and Intelligence Systems," October 9, 1985
(m) DoD Instruction 7041.3, "Economic Analysis and Program Evaluation for Resource Management," October 18, 1972
(n) DoD Directive 8320.1, "DoD Data Administration," September 26, 1991
(o) Office of the Assistant Secretary of Defense for Command,

Control, Communications, and Intelligence Memorandum, "Interim Management Guidance on Functional Process Improvement," August 5, 1992

(p) Title 41, Code of Federal Regulations, Part 201, "The Federal Information Resources Management Regulation," current edition

(q) DoD 5000.52-M, "Career Development Program for Acquisition Personnel," November 1991, authorized by DoD Directive 5000.52, October 25, 1991

(r) Section 2315 of title 10, United States Code (Warner Amendment)

(s) DoD Directive 7740.1, "DoD Information Resources Management Program," June 20, 1983

(t) DoD Instruction 7740.3, "Information Resources Management (IRM) Review Program," February 7, 1989

(u) Section 759 of title 40, United States Code (Brooks Act)

---

1 Available from Defense Technical Information Center (DTIC), Building 5, Cameron Station, Alexandria, VA 22304-6145, #ADA253476

2 Available from Defense Technical Information Center (DTIC), Building 5, Cameron Station, Alexandria, VA 22304-6145, #ADA253475

DEFINITIONS

1. AIS Operations Manager. The principal official responsible for directing and managing the operation and maintenance of an AIS following its designation as a fully operational system.

2. Exit Criteria. Program-specific accomplishments that must be satisfactorily demonstrated before an effort or program can progress further in the current LCM phase or transition to the next LCM phase. Exit criteria may include such factors as critical test issues, the attainment of projected growth curves and baseline parameters, and the results of risk-reduction efforts deemed critical to the decision to proceed further. Exit criteria supplement minimum required accomplishments and are specific to each LCM phase.

3. Government-Off-The-Shelf (GOTS). Products for which the Government owns the data rights, that are authorized to be transferred to other DoD or Government customers, and that require no unique modifications or maintenance over the life cycle of the product.

4. In-Process Review (IPR). A LCM review between LCM milestones to determine the current program status, progress since the last LCM review, program risks and risk-reduction measures, and potential program problems. The MDA shall issue program guidance in a SDM as a result of an IPR.

5. MAISRC Members

The MAISRC members are, as follows:

a. The OSD PSA, or equivalent official, providing management responsibility for the functional area supported by the AIS subject to review.

b. The Assistant Secretary of Defense (Program Analysis and Evaluation) (ASD(PA&E)).

c. The Assistant Secretary of Defense (Reserve Affairs), when appropriate.

d. The C, DoD.

e. The DASD(D-WC3).

f. The DASD(CI&SCM).

g. The Director, Acquisition Policy and Program Integration, Office of the Under Secretary of Defense (Acquisition) (OUSD(A)).

h. The D,T&E, OUSD(A).

i. The D,OT&E.

j. The representative(s) of the Chairman of the Joint Chiefs of Staff.

k. The Senior Acquisition Authority, or the designated representative, for the AIS program subject to MAISRC review.

l. The other members, at the discretion of the MDA.

6. MAISRC Staff. Action officers assigned by each MAISRC member.

7. Major Automated Information System Review Council (MAISRC). The DoD AIS LCM review body for each of the MAISs subject to review under the procedures of DoD Directive 8120.1 (reference (d)). The MAISRC is composed of the MAISRC Chair, the MAISRC members, the MAISRC Executive Secretary, and the MAISRC staff. The MAISRC is the senior advisory body to the MDA, providing advice on program readiness to proceed into the subsequent LCM phases and as to whether proposed plans for the subsequent LCM phases are consistent with sound management practices.

8. Program Baseline Breach. A condition that occurs when the program deviates from the approved baseline. A breach of baseline occurs when the cost shown in the baseline agreement is estimated to increase by more than 15 percent during the system development phase, there is a projected schedule slippage of 90 days, or there are modifications to approved program funding that result in a nonexecutable baseline.

9. Reusable Software Asset. Any product of the software life cycle that can be reused, including, but not limited to, requirements, specifications, architectures, designs, code, test cases, and documentation.

10. Standards Profile. A collection of information technology standards based on the Technical Reference Model for Information Management (reference (h)), which are appropriately tailored, integrated, and used together to satisfy a functional need.

LCM PHASES AND MILESTONES

A. OVERVIEW

This enclosure describes the LCM phases and milestones for the design, development, deployment, operation, support, and/or termination and disposal of all AISs, as defined in DoD Directive 8120.1 (reference (d)). The activities and conditions to initiate and complete each phase and milestone are defined in sections D. through O, below. The LCM milestones are to ensure that user requirements are met and provide a standard set of decision points for senior management involvement.

B. AIS PROGRAM STRATEGIES

A program strategy is the method utilized to design, develop, and deploy an AIS through its life cycle. There are four "program strategies" that may be considered by the AIS PMs and approved by the MDA. The program strategies are "grand design," "incremental," "evolutionary," and "other," and are defined, as follows:

1. Grand Design Program Strategies. They are characterized by acquisition, development, and deployment of the total functional capability in a single increment. The required function-al capability can be clearly defined and further enhancement is not foreseen to be necessary. A grand design program strategy is most appropriate when the user requirements are well under-stood, supported by precedent, easily defined, and assessment of other considerations (e.g., risks, funding, schedule, size of program, or early realization of benefits) indicates that a phased approach is not required.

2. Incremental Program Strategies. They are generally characterized by acquisition, development, and deployment of functionality through a number of clearly defined system "increments" that stand on their own. The number, size, and phasing of the "increments" required for satisfaction of the total scope of the stated user requirement must be defined by the AIS PM, in consultation with the functional user. An incremental program strategy is most appropriate when the user requirements are well understood and easily defined, but assessment of other considerations (e.g., risks, funding, schedule, size of program,

or early realization of benefits) indicates a phased approach is more prudent or beneficial.

3. Evolutionary Program Strategies. They are generally characterized by the design, development, and deployment of a preliminary capability that includes provisions for the evolutionary addition of future functionality and changes, as requirements are further defined. Evolutionary developments are conducted within the context of a plan for evolution towards an ultimate capability. The total functional requirements the AIS is to meet are successively refined through feedback from previous increments and reflected in subsequent increments. Evolutionary program strategies are particularly suited to situations where, although the general scope of the program is known and a basic core of user functional characteristics can be defined, detailed system or functional requirements are difficult to articulate (e.g., decision-aiding systems requiring extensive human-machine interaction). The evolutionary program strategy differs from the incremental program strategy because the total functional capability is not completely defined at inception, but evolves as the system is built.

4. Other Program Strategies. They are intended to encompass variations and/or combinations of the program strategies in subparagraphs B.1. through B.3., above, or other program strategies not listed above; e.g., OMB Circular A-109 (reference (k)) acquisitions, commercial-off-the-shelf (COTS), nondevelopmental item (NDI), and commercial item acquisitions.

C. AIS LCM PROCESS

1. Tasks applicable to each LCM phase and the decision process for each milestone are described in sections D. through O., below. Those tasks are essentially the same for all program strategies before Milestone I. Subsequent tasks shall be tailored to the program strategy approved at Milestone I.

2. The proposed program strategy shall be outlined during the "Concept Exploration and Definition" phase (Phase 0) and approved at the Milestone I review. For those isolated cases requiring earlier decision, the program strategy may be proposed by program management and approved by the MDA before the Milestone I decision. The program strategy may be modified on approval by the MDA. Procurement and development may not be initiated before specific authorization.

3. Rapid prototyping may be used throughout the LCM process. Rapid prototyping may be used to support analyses performed during the "Concept Exploration and Definition" phase and the "Demonstration and Validation" phase. Additionally, rapid prototyping may be used to develop a subset of functional capability and to export that subset to a limited user community before traditional delivery of functionality in whichever program strategy is selected. The use of rapid prototyping must be approved at the milestone decision point before its use.

4. Depending on the selected program strategy, combined, or repeated milestone decision points and associated activities within the life-cycle phase may be required. The number of replicated decision points, and how increments between those decision points are reviewed, shall be specified in the proposed program strategy presented at Milestone I. For example, in an evolutionary program strategy, there may be multiple Milestone II and Milestone III decision points, depending on the amount of functionality provided in each increment. Replicated milestone decision points implies repeating the phases preceding the milestone decision points. A second example is the use of Government-off-the-shelf and/or COTS and/or NDI products, requiring no custom changes, may result in the consolidation of the LCM "Demonstration and Validation" and the "Development" phases. In that case, a combined Milestone II and III review is justified. Similar tailoring may be applicable to migration systems.

5. Determination of the appropriate LCM phase for the AISs designated to evolve to migration systems shall be made by the MDA. The AISs designated as "migration systems" by an OSD PSA, may require validation and/or revalidation of previous milestone decisions at an appropriate LCM review.

6. At each milestone decision point, assessments shall be made of the status of program execution and the plans for the next phase and the remainder of the program. The risks associated with that program and the adequacy of risk management planning must be explicitly addressed. Additionally, program-specific results to be required in the next phase, called "exit criteria," shall be established.

7. Exit criteria are critical results that must be attained during the next life-cycle phase. They can be viewed as gates through which a program must pass during that phase. They can include, for example, the requirement to achieve a specified level of performance in testing or conduct a critical design review before committing funds for long-lead item procurement.

8. Acquisition authorities shall ensure that contracts are structured so that milestone decisions are made before expenditure of funds on activities in subsequent phases. Contract options or phases shall also be structured so that the implementation of the exit criteria for the phases that must be performed by the contractor and all information regarding the exit criteria for the phases that must be provided by the contractor is provided in time to support the LCM review. The objective is to provide proper fiscal controls without delaying the LCM decisions or contracts.

D. MINIMUM REQUIRED ACCOMPLISHMENTS

Besides the minimum required accomplishments applicable at specific LCM phases, the following minimum required accomplishments apply to each LCM phase throughout the life cycle, regardless of the program strategy used:

1. The AIS MNS is prepared, in accordance with DoD 7920.2-M (reference (b)), and submitted for validation and approval, in accordance with paragraphs E.2.b., E.2.c, and E.8.e., in the Instruction. For command, control, communications, and intelligence (C3I) systems, the AIS MNS is submitted for validation and approval, in accordance with DoD Directive 4630.5 (reference (l)). The following applies to the AIS MNS:

a. The complete AIS MNS is updated, if appropriate, and revalidated for each milestone review. It also is updated, if appropriate, and revalidated at the time-of-designation as a mi-gration system.

b. For incremental and evolutionary program strategies, if the increment under review does not satisfy the complete mission need, the subset of functional requirements defined as the increment are validated at the applicable milestone review.

2. Plan for the development and utilization of reusable software assets.

3. Full consideration is given to the AIS training, man-power and personnel issues, maintenance, and logistics requirements. Associated costs and manpower impacts shall be factored into the AIS program strategy.

4. Development of security specifications is based on identified security requirements and consideration of potential threats and vulnerabilities.

5. Resources are programmed in the Future Years Defense Plan to satisfy the requirements of the program plan and proposed schedule.

6. DoD approved software metrics are used.

7. The AIS performance objectives are established and sup-ported by program evaluations and cost and benefits analyses that shall be refined in later phases and prepared, in accord-ance with DoD Instruction 7041.3 (reference (m)).

8. Standards planning, including identification of information technology standards profiles, shall be accomplished in accordance with the Technical Reference Model for Information Management (reference (h)) and reference (b).

9. The development of the AIS human computer interface shall be accomplished, in accordance with the Human Computer Interface Style Guide (reference (i)).

10. The design, development, registration, and implementation of the DoD standard data elements shall be accomplished, in accordance with DoD Directive 8320.1 (reference (n)).

11. Critical operational test criteria, appropriate for the life-cycle phase of the AIS, shall be established by the functional user, agreed to by the lead acquisition authority, and documented in the AIS program baseline, in accordance with DoD 7920.2-M (reference (b)). The critical operational test criteria shall be objective, unambiguous, and used to evaluate the operational effectiveness and suitability of the AIS. A Government-off-the-shelf and/or COTS and/or NDI product, once certified as meeting the appropriate standards, shall consider the need to retest when ported to a different hardware suite.

12. The C3I systems shall be reviewed for adherence to compatibility and interoperability policy in DoD Directive 4630.5 (reference (l)) at each review.

13. All appropriate documentation, in accordance with refer-ence (b), shall be completed and forwarded to the appropriate oversight body for review.

E. LIFE-CYCLE PHASES AND MILESTONES

1. Functional process improvement precedes initiation of the LCM phases and continues throughout the LCM phases. It involves the streamlining and standardization of current processes, data and the AISs across the Department of Defense. The OSD PSAs have the responsibility and authority to define functional requirements, and to evaluate and improve current processes, data, and the supporting AISs. That is an iterative process, beginning with elimination of nonvalue added activities, and continuing through increasingly rigorous analyses to identify changes in the way missions and functions are accomplished. The OSD PSAs are to exercise that responsibility and authority, in accordance with the Office of the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence Memorandum (reference (o)). During that process a mission need is defined or revised and an AIS may be developed or modified. At that point, the LCM process described in DoD Directive 8120.1 (reference (d)) and in sections D. through O. of this enclosure, is followed, starting at the appropriate LCM phase.

2. During the AIS mission need justification process the functional user defines and documents a mission need and validates that need. The need justification process begins when the functional user recognizes a mission deficiency or an opportunity to improve mission performance, and initiates a functional process review and information needs analysis to define and document that need; it ends with approval of the AIS MNS by the appropriate OSD PSA or the designated representative.

3. The OSD PSA or the designated representative ensures that the following areas of planning and evaluation are completed and documented in the AIS MNS:

a. Identification of the mission.

b. Description of the existing functional processes, procedures, and capabilities.

c. Description of the mission deficiencies or opportunities.

d. Evaluation of the impact of deficiencies on the performance of the mission.

e. Description of the optimization of existing functional processes and procedures.

f. Identification of constraints and assumptions for functional, technical, and financial areas that may impact potential alternative solutions.

F. MILESTONE 0 - CONCEPT STUDIES DECISION

The purpose of Milestone 0 is to determine whether to proceed to the "Concept Exploration and Definition" phase based on the definition and justification of a valid mission need. Approval at Milestone 0 authorizes initiation of the "Concept Exploration and Definition" phase and expenditure of resources for the activities of that phase.

G. PHASE 0 - CONCEPT EXPLORATION AND DEFINITION PHASE

1. Purpose. That phase explores alternatives for satisfying the documented mission need and defines the preferred pro-gram concept. That phase includes development of supporting analyses and information that identify and evaluate alternative functional and technical concepts that satisfy the approved AIS MNS. At completion of that phase, the lead acquisition authority shall have satisfied the FIRMR (reference (p)) for the completion of a requirements analysis and an analysis of alternatives. The lead acquisition authority shall also have selected a proposed acquisition strategy.

2. Initiation of the Phase. That phase begins at approval of Milestone 0, "Concept Studies Decision."

3. Completion of the Phase. That phase ends at Milestone I after completion of tasks for that phase and the MDA's approval.

4. Minimum Required Accomplishments. In that phase, the following areas of planning and evaluation shall be successfully completed, besides the minimum required accomplishments referenced earlier in section D of this enclosure.

a. Appointment of an AIS PM, in accordance with DoD 5000.52-M (reference (q)), and approval of an AIS PM's Charter.

b. Identification and prioritization of functional requirements. The functional requirements for that AIS have been justified in the overall functional area process analysis (see the Office of the Assistant Secretary of Defense for Command,

Control, Communications, and Intelligence Memorandum (reference (o))).

c. Assessment of alternative functional concepts for performing needed mission activities, including simplification of the business methods.

d. Assessment of alternative technical concepts and architectures that could satisfy the required needs, including reuse of existing software assets.

e. Assessment of the intended uses of the AIS, with particular attention to identifying all uses that meet the criteria of 10 U.S.C. 2315 (Warner Amendment) (reference (r)) and a written determination that procurements of automatic data processing equipment needed to support the AIS are covered by or are exempt from the Brooks Act (40 U.S.C 759 (reference (u))).

f. Selection of the best program concept to satisfy the mission need based on the results of combining the evaluation of functional and technical alternatives with other key program factors (e.g., acquisition strategy, deployment approach, training, and schedule) and their related risks, costs, and benefits.

g. Evaluation, selection, and approval of the program strategy to implement the selected program concept.

h. Initial planning for the design, development, testing, deployment, maintenance, and technology refreshment of the proposed AIS. The plan to identify and collect standard data elements is completed, in accordance with DoD Directive 8320.1 (reference (n)).

i. Initial identification of risk areas and definition of risk reduction measures, management approaches, and plans.

j. Development of the AIS functional description, to the extent possible, given the selected program concept.

k. Consistency between the proposed program concept and the organization's strategic planning, in accordance with DoD Directive 7740.1 (reference (s)).

l. Definition of the activities to occur for the program concept demonstration(s) and the criteria to evaluate the demonstration(s). The demonstration program(s) shall be designed, coded, tested, and implemented to provide basic, or elementary, capabilities across the full range of requirements.

H. MILESTONE I - CONCEPT DEMONSTRATION DECISION

The purpose of Milestone I is to approve the selection of the best program concept to implement the required functional capabilities that satisfy the approved AIS MNS. The Milestone I approval authorizes program management to initiate and expend

resources for the activities of the "Demonstration and Validation" phase, as set forth in the approved program strategy.

I. PHASE I - DEMONSTRATION AND VALIDATION PHASE

1. Purpose. The activities of that phase shall depend on the approved program strategy.

a. Grand Design. Validate the selected system design and complete the technical specification.

b. Incremental. Design, code, test, and demonstrate a subset of functional capability to support the program strategy.

c. Evolutionary. Design, code, test, and demonstrate a program that provides basic, or elementary, capabilities in the context of a plan for evolution towards an ultimate capability.

d. Other. The activities to be accomplished during that phase shall depend on the specific definition of that program strategy.

2. Initiation of the Phase. That phase begins at approval of Milestone I, "Concept Demonstration Decision." For incremental and evolutionary program strategies, recurrences of that phase may occur. Each recurrence coincides with major increments of the system's functional capabilities, as defined at Milestone 0 and/or reaffirmed at the previous LCM review.

3. Completion of the Phase. That phase ends at Milestone II after completion of tasks for that phase and approval by the MDA. The end of the phase for each recurrence of an incremental or evolutionary program strategy results in approval to begin development of the program increment just validated in the "Demonstration and Validation" phase.

4. Minimum Required Accomplishments. In that phase, program management ensures that the following have been successfully completed, besides those general minimum required accomplishments referenced earlier in section D. of this enclosure:

a. Grand Design

(1) Demonstrations and/or rapid prototyping activi-ties are successfully completed and results are integrated into the AIS design.

(2) Detailed specifications are prepared and documented for the total system. The AIS design is complete and based on refined functional requirements, final standards profiles, DoD standard data elements, and the AIS functional description.

b. Incremental

(1) Agreement is reached with the user on the identification of increments and the timing of each increment.

(2) Demonstrations and/or rapid prototyping are successfully completed and results are integrated into the design.

(3) Detailed specifications, including final standards profiles and DoD standard data elements, are prepared and documented for the total system. The AIS design is complete and based on functional requirements and the AIS functional description for the increment under development.

c. Evolutionary

(1) Agreement is reached with the user on the approach to evolve the design and implementation and the first increment of capability to be provided.

(2) Demonstration and/or rapid prototyping activities are successfully completed, providing the expectation the program can evolve to provide needed capability within antici-pated costs and schedule. Results are integrated into the AIS design.

(3) Detailed specifications, including final standards profiles and DoD standard data elements, are prepared and documented for the next increment. The AIS design is based on functional requirements and functional description, including anticipated life-cycle requirements growth.

d. Other. The minimum required accomplishments shall depend on the specific definition of that program strategy.

J. MILESTONE II - DEVELOPMENT DECISION

The purpose of Milestone II is to assess the adequacy of the program to accomplish the stated mission needs in light of

activities accomplished during Phase I. Milestone II approval authorizes program management to initiate and expend resources for the activities of the "Development" phase. For incremental and evolutionary programs, resource expenditure is limited to those capabilities approved at that Milestone.

K. PHASE II - DEVELOPMENT PHASE

1. Purpose. The activities of that phase shall depend on the approved program strategy.

a. Grand Design. Develop the AIS, test the completed AIS to ensure that it satisfies mission needs described in the AIS MNS, and prepare for deployment.

b. Incremental. As previously described in paragraph C.4., above, the activities in that phase may be repeated. For

each recurrence of that phase, code and test the applicable increments of the overall design. Ensure that all user agreed capabilities are satisfied. Prepare for deployment.

c. Evolutionary. As previously described in paragraph C.4., above, the activities in that phase may be repeated. For each recurrence of that phase, design, code, and test the applicable increments as they progress toward an overall design. Ensure that all user agreements are satisfied. Prepare for deployment.

d. Other. The activities to be accomplished during that phase shall depend on the specific definition of that program strategy.

2. Initiation of the Phase. That phase begins at approval of Milestone II, "Development Decision." For incremental and evolutionary program strategies, recurrences of that phase may occur. Each recurrence coincides with major increments of the system's functional capabilities, as defined at Milestone 0 and/or reaffirmed at the previous LCM review.

3. Completion of the Phase. That phase ends at Milestone III after completion of tasks for that phase and approval by the MDA. The end of the phase for each recurrence of an incremental or evolutionary program strategy results in approval to begin deployment of the program increment just validated in the "Development" phase. An increment must stand on its own merits to receive approval to begin deployment.

4. Minimum Required Accomplishments. In that phase, the following areas of planning and evaluation shall be successfully completed, besides the minimum required accomplishments referenced earlier in section D. of this enclosure:

a. Grand Design

(1) Full-scale system development and developmental testing are completed.

(2) Before the initiation of operational testing, security testing and evaluation of the AIS shall be accomplished to certify that technical security features and other safeguards satisfy the specified security requirements.

(3) Operational testing of the completed AIS vali-dates that the AIS meets critical functional user requirements and is ready for deployment and operational use.

(4) Appropriate standards conformance and interoperability testing is complete.

b. Incremental

(1) The developed increment and developmental test-ing are completed.

(2) User reaffirmation of capability in succeeding increments has been obtained.

(3) Before the initiation of operational testing, security testing and evaluation of the AIS increment shall be accomplished to certify that technical security features and other safeguards satisfy the specified security requirements.

(4) Operational testing of the developed increment validates that the critical functional user requirements are met and the increment is ready for deployment and operational use.

(5) Appropriate standards conformance and inter-operability testing is complete, for the increment to be deployed.

c. Evolutionary

(1) Development of the planned increment and the associated developmental testing are completed and demonstrate successful progress toward the overall design.

(2) User reaffirmation of capability in succeeding increments has been obtained.

(3) Before the initiation of operational testing, security testing and evaluation of the developed increment shall be accomplished to certify that technical security features and other safeguards satisfy the specified security requirements.

(4) Operational testing of the developed increment validates that the critical functional user requirements are met and the increment is ready for deployment and operational use.

(5) Appropriate standards conformance and inter-operability testing is complete, for the increment to be deployed.

d. Other. The exit criteria shall depend on the specific definition of that program strategy.

L. MILESTONE III - PRODUCTION DECISION

The purpose of Milestone III is to determine whether the developed AIS or the AIS increment has been operationally test-ed, stands on its own merit, and is ready for deployment. For incremental and evolutionary programs, resource expenditure is limited to those capabilities approved at that Milestone. The Milestone III SDM identifies the MDA for the Milestone IV decision(s) that will occur during the "Operations and Support" phase.

M. PHASE III - PRODUCTION AND DEPLOYMENT PHASE

1. Purpose. The purpose of that phase is to complete the deployment of the AIS, in accordance with the approved program plan.

2. Initiation of the Phase. That phase begins at Milestone III, "Production Decision." For incremental and evolutionary program strategies, recurrences of that phase may occur. Each recurrence coincides with major increments of the system's functional capabilities, as defined at Milestone 0 and/or reaffirmed at the previous LCM review.

3. Completion of the Phase. That phase ends when management responsibility for the AIS or the AIS increment is transferred from the AIS PM to an AIS operations manager or on decla-ration of operational capability, and completion of other tasks for that phase.

4. Minimum Required Accomplishments. In that phase, pro-gram management and the AIS operations management ensure that the following have been successfully completed, besides the minimum required accomplishments referenced in section D. of this enclosure:

a. The AIS management transition and support planning from the AIS PM to an AIS operations manager is complete or declaration of operational capability has been documented.

b. The postdeployment AIS operational assessment planning for Milestone IV is complete, to include procedures for collecting and evaluating benefits, correcting the AIS malfunctions, responding to functional user needs, identifying changes to the approved standards profiles and approved DoD standard data elements, and ensuring the continuous use of approved security safeguards.

c. The AIS PM has conducted and submitted an assessment to the MDA of the success of the program strategy, as well as the effectiveness of process and quality metrics, effectiveness of the software development environment, and the overall contribution of risk-reduction techniques.

N. PHASE IV - OPERATIONS AND SUPPORT PHASE

1. Purpose. The activities of that phase are to operate and maintain the AIS, or the AIS increments, evaluate the AIS or the AIS increments' effectiveness, and plan for modernization of the AIS or the AIS increments.

2. Initiation of the Phase. That phase may follow or over-lap Phase III, "Production and Deployment" phase. It begins either on completion of management responsibility transfer from the AIS PM to the AIS operations manager, or on declaration of an operational capability.

3. Completion of the Phase. That phase ends when the AIS is modernized or terminated.

4. Minimum Required Accomplishments. In that phase, the OSD PSA and the AIS operations management ensure that the following have been successfully completed:

a. Benefits have been collected and evaluated, malfunctions have been corrected, security safeguards are ensured, and operating procedures have been updated.

b. The OSD PSA validated that mission needs have been satisfied; operational support of the AIS is satisfactory; and affordability, performance, and benefits are acceptable.

c. Planning is completed for evolution of the AIS, including assessment of whether the existing AIS continues to sat-isfy validated mission needs, is to be designated a migration system, requires modernization, or should be terminated.

d. The accomplishments in paragraphs N.4.a. through N.4.c., above also shall be considered as part of the DoD Component's information resources management review program. The results of the evaluations and assessments completed during phase IV shall be reported, in accordance with DoD Instruction 7740.3 (reference (t)).

O. MILESTONE IV - MAJOR MODIFICATION DECISION

1. At Milestone IV, the OSD PSA or the Chairman of the Joint Chiefs of Staff validates that the mission needs are being satisfied. The MDA considers the postdeployment AIS operational assessment, to include operational support of the AIS is satisfactory, and affordability, performance, and benefits are acceptable. Consideration of an operational AIS as a migration system shall occur at that milestone decision point. Based on those considerations a decision shall be made to continue operation and support, modernize, or terminate the AIS. Approval by the MDA to modernize the AIS authorizes the AIS postdeployment management to program resources for modernization and to initiate the "Concept Exploration and Definition" phase.

2. For the grand design or incremental program strategy, a Milestone IV review shall be conducted no later than 4 years after Milestone III approval and every 3 years, thereafter, or as required when other significant changes (e.g., mission, policy, legal requirements, or rapid degradation in the AIS performance or maintainability) necessitate. For the evolutionary program strategy, a Milestone IV review shall be conducted no later than 4 years after the Milestone III approval of the first increment and every 3 years, thereafter, or as required when other significant changes necessitate.